

Heteropodidae and Lycosidae of Buxa Tiger Reserve, West Bengal

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Abstract Four species, *Heteropoda acuta* n. sp., *Hippasa partita*, *Pardosa duplicata* n. sp. and *P. sumatrana* are for the first time known to be the members of the spider fauna of Buxa Tiger Reserve. *Hippasa partita* is a new record from India. All these four species are reported or described.

Biogeographically, Buxa Tiger Reserve (758.82 sq. km.; 23°30'–23°50' North Latitude and 89°25'–89°55' East Longitude) is distinctive because it includes Eastern Himalaya and lower Gangetic Plains. It has two forest divisions, the entire Buxa forest division and a part of Coach Bihar forest division. The forest of the reserve has five broad types with their sub-types. Those are: I, riverine forest; II, plain forest, i) dry mixed forest, ii) sal forest, iii) wet mixed forest, iv) evergreen forest, v) malate forest; III, plateau forest; IV, hill forest; V, savannah.

Unfortunately, despite enjoying extreme climatic variation together with vegetation, the area is known only through the large mammals and birds. During April '93, we visited the place to look into the diversity of entomofauna (including spiders). Surprisingly, the area is found to be extremely rich in terms of insects and spiders. And accordingly in the following years we like to make a sustained effort for the insects and spiders.

The present paper deals with Heteropodidae and Lycosidae. There are altogether four species of which two, *Heteropoda acuta* and *Pardosa duplicata* are described as new to science and *Hippasa partita* is found to be new record from India. The types are deposited in the collection of the Entomology Laboratory, Department of Zoology, University of Calcutta, Calcutta, India.

Heteropoda acuta n. sp.

(Figs. 1–5)

Male (holotype). Measurements (mm). Total length 12.0; carapace length 5.5, width 6.0; abdomen length 6.5, width 5.0; legs and palp as in Table 1.

Carapace pale brown, wider than long, strongly pubescence, anteriorly with few brown hairs, anterior margin straight, antero-lateral angles raised and produced; cephalic region anteriorly rectangular, basally with a longitudinal fovea, cervical grooves distinct, that enclose another median longitudinal groove running between the postero-median eyes and the fovea, outwardly directed radii distinct, marked by

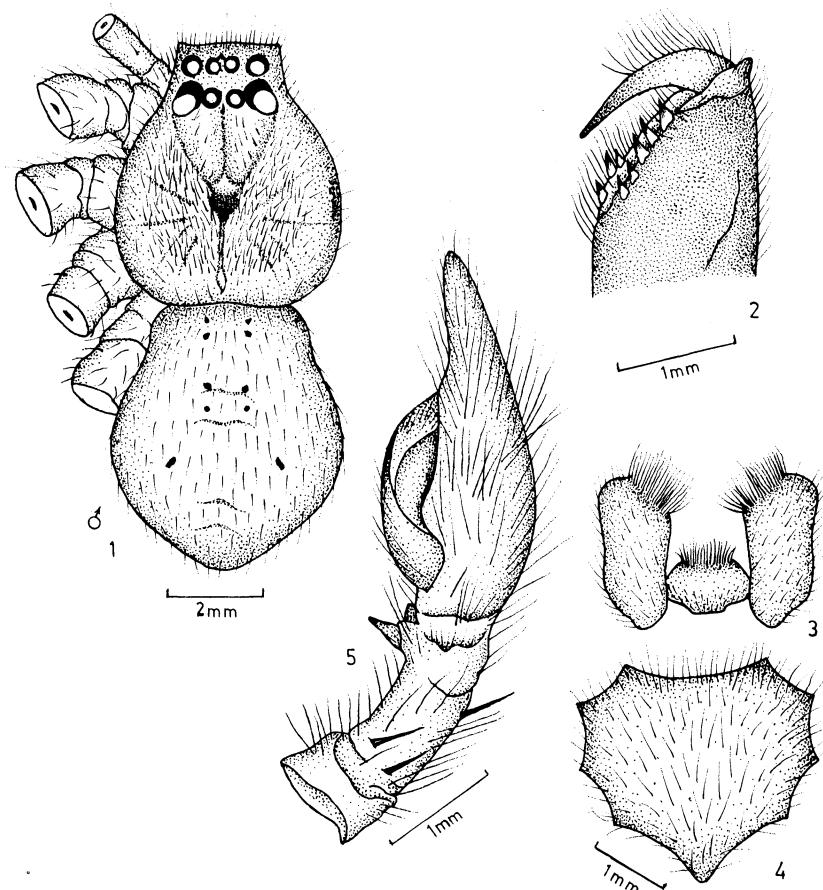
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Table 1. Length of legs of ♂ holotype of *Heteropoda acuta* n. sp. (in mm).

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	11.0	16.5	11.0	4.0	42.5
II	14.0	16.5	15.0	4.0	49.5
III	12.0	14.0	10.5	3.5	40.0
IV	11.0	14.0	13.0	3.5	41.5
Palp	4.0	3.5	—	3.5	11.0

Figs. 1-5. *Heteropoda acuta* n. sp.—1, Whole body; 2, chelicera; 3, maxillae and labium; 4, sternum; 5, male palp.

brown lines formed of brownish pubescence, posteriorly with another median longitudinal fovea. Eyes distinctly in two rows, black, excepting the postero-medians that are pearly white, anterior row of eyes shorter than the posterior, procurved,

laterals larger than the medians, posterior row recurved, with laterals appearing duplicated; all eyes basally with a black patch; ocular quadrangle longer than wide, narrowed anteriorly. Chelicerae brown, robust, inner margin with five and outer margin with three teeth, fangs darker, strongly curved; maxillae and labium orangish, broad, flat; maxillae longer than wide, labium wider than long, both anteriorly scopulated; sternum yellow, heart-shaped, posteriorly little bluish, with brown, erect, long spines. Legs yellow basally, rest gradually brown, femur onwards with circular brown markings, these on tibia band-like, with regularly distributed brown, long spines, tarsal scopulae distinct, claw-tuft absent; leg formula 2143; male palp as in Fig. 5. Abdomen brown-black, anteriorly narrowed, entirely beared, medially little free.

Remarks. Indian *Heteropoda* LATREILLE is known by 22 species of which only 13 are with carapace as long as or longer than its width. Of these, *H. robusta* FAGE is the only species to have five teeth on inner margin of chelicerae. The said species belongs to the group of 7 that are with labium wider than long (SETHI & TIKADER, 1988). Basing on the species characteristics of the group, the present species in having 1, carapace longer than wide, 2, labium wider than long and 3, cheliceral inner margin with five teeth appears close to *H. robusta* but stands distinct due to 1, male palp which is with a, acute cymbium, b, sac-like tegulum and embolus, c, indistinct median apophysis and d, distinct basal apophysis; 2, much difference in the shape of abdomen. Again the present species because of its peculiar shape of abdomen may broadly be related to *H. phasma* SIMON but can be separated out by the number of teeth on the inner margin of chelicerae, distinctly different maxillae and labium and in many more characters as evident from the description and figures. Therefore, the species is described as new to science.

Etymology. Species name has been coined because of acute nature of the cymbium.

Material examined. Holotype: ♂, 5. IV. 1993, South Raydak, B.T.R., Jalpaiguri, West Bengal, India (S. SAHA).

Hippasa partita (O. P. CAMBRIDGE)

Trochosa partita O.P. CAMBRIDGE, 1876, Proc. Zool. Soc. Lond.: 541-603; TIKADER, 1980, Fauna of India, Spiders: Araneae: Lycosidae, Pt. 2, Zool. Surv. India, Calcutta: 291-293.

Material examined. 1♂, 5. IV. 1993, South Raydak, B.T.R., Jalpaiguri, West Bengal.

Pardosa duplicata n. sp.

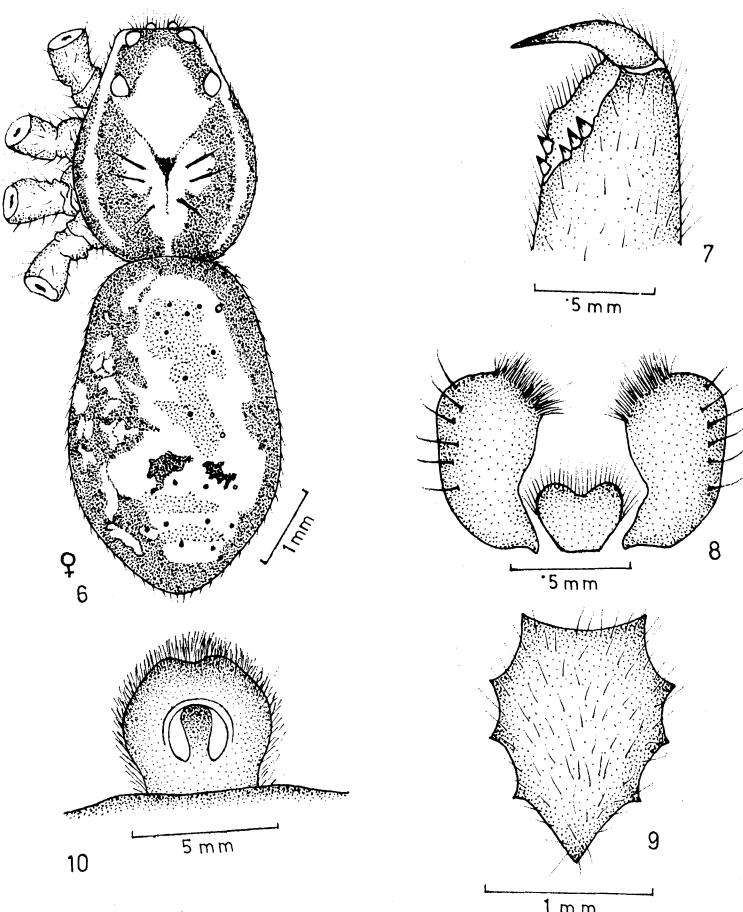
(Figs. 6-10)

Female (holotype). Measurements (mm): Total length 8.0; carapace length 3.0, width 2.5; abdomen length 5.0, width 3.0; legs as in Table 2.

Cephalothorax brown, darker marginally and sub-marginally, with cephalic region anteriorly black and raised, posteriorly with cervical grooves, medially with a short longitudinal groove; centro-medially with a distinct longitudinal fovea above the brown, short, longitudinal stria with few outwardly directed black radii, densely

Table 2. Length of legs of ♀ holotype of *Pardosa duplicata* n. sp. (in mm).

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.0	3.0	1.5	1.0	7.5
II	2.0	3.0	1.5	1.3	7.8
III	2.0	2.5	2.0	1.5	8.0
IV	3.0	4.0	3.0	2.0	12.0



Figs. 6-10. *Pardosa duplicata* n. sp.—6, Whole body; 7, chelicera; 8, maxillae and labium; 9, sternum; 10, epigyne.

pubescence, leaving the median area free, hairs, anteriorly spiny, posteriorly silky and include both brownish and white ones. Eyes in three rows, anteriormost eyes white, placed near the anterior margin, eyes of median large, partly black and partly white, placed on the raised cephalic region, posterior eyes entirely black,

little smaller than the former, placed on raising region of the cephalic region, median and posterior rows forming the anteriorly narrowed ocular quadrangle; densely pubescence with both brownish and whitish hairs, these anteriorly appear spiny. Chelicerae brown with fangs little darker, inner margin with three and outer margin with two teeth, fangs of moderate size; maxillae yellow-brown, broad, longer than wide; labium brown, broad, wider than long, both anteriorly scopulated; sternum yellow, elongated, medially broad, posteriorly pointed, with brown erect spines; legs yellow, femur and tibia with brown, irregular circular bands, rest more dark, entirely with erect spines; leg formula 4321. Abdomen off-white with blackish markings; anterior half medially with two brown spots arranged in rows, these on posterior half four, medially with two and sub-marginally with two such, arranged transversely, black, transverse arched bands distinct, these in places unite the anterior and posterior bands by the lateral bands; oval, anteriorly overhang the cephalothorax, posteriorly narrowed, entirely clothed with short to long, brown, erect or semierect spines, few of these appear whitish; epigyne as in Fig. 10.

Remarks. TIKADER and MALHOTRA (1980) while presenting the species key of the genus *Pardosa* KOCH broadly grouped the species depending upon the total length, followed by the procurved and straight or recurved nature of the anterior row of eyes. They (*op. cit.*) included 12 species known from the country that are never more than 7 mm long. However, only 5 species are known to have anterior row of eyes either straight or slightly recurved. Again, of these, only 1 species, *P. mysorensis* (TIKADER et MUKERJI) is known to possess a V-shaped marking below the third row of eye. Legs of the said species are without any patches. They (*op. cit.*) could separate it from the other 4 species in having the opposite combination of characters indicated above.

Present species appears to be close to the species group that are with anterior row of eyes straight. However, it cannot be sub-grouped further (as has been made by TIKADER & MALHOTRA, 1980, pp. 316–317) because of the presence of leg patches and V-shaped marking. By looking into the apparent similarity between the present species and *P. mysorensis* (TIKADER et MUKERJI) particularly in respect to the dorsal sculpturing one would naturally be inclined to define the present species as *mysorensis*. However, we are more inclined to nominate the present species as new to science because of the presence of both leg patches and V-shaped marking (such combination is always absent in the species group that are with anterior row of eyes straight and recurved). Again, it further stands out to be distinct from *mysorensis* in having a distinct difference in the epigyne. Also, it does not show any relationship with the *Pardosa* species known from China and Japan (CHEN & ZHANG, 1991; TANAKA, 1985; YAGINUMA, 1986).

Etymology. The species has been named as *P. duplicita* because of the presence of both leg patches and V-shaped marking on carapace.

Material examined. Holotype: ♀, 6. IV. 1993, South Raydak, B.T.R., Jalpaiguri, West Bengal, India (S. SAHA).

Pardosa sumatrana (THORELL)

Lycosa sumatrana THORELL, 1890, Ann. Mus. Stor. nat. Genova, 30: 136; TIKADER, 1980, Fauna of India, Spiders: Araneae: Lycosidae, Pt. 2., Zool. Surv. India, Calcutta: 353–355.

Material examined. 1♀, 5. IV. 1993, South Raydak, B.T.R., Jalpaiguri, West Bengal.

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